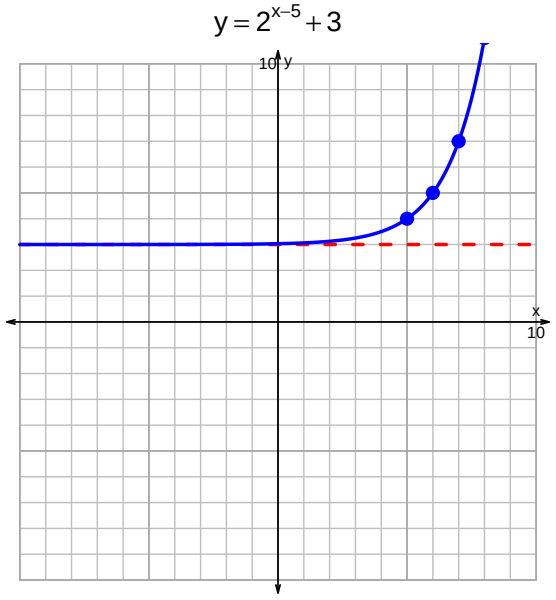
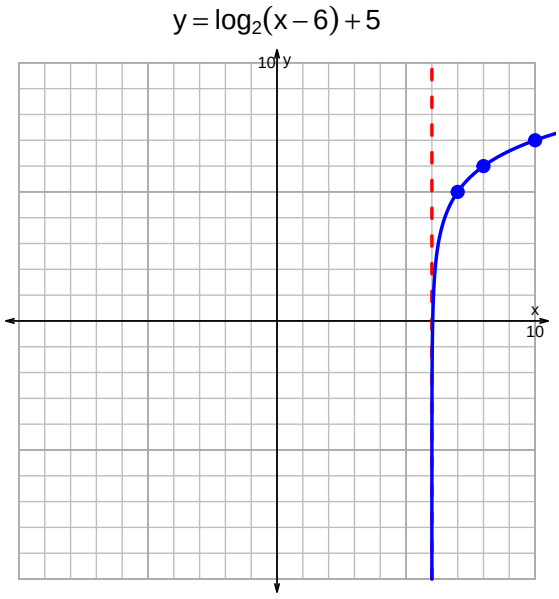
Name: Date:

s18quiz: EXP LOG (Solution v10)

1. Graph $y = 2^{x-5} + 3$ and $y = \log_2(x-6) + 5$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-23 = \left(\frac{-7}{5}\right) \cdot 2^{3t/4}$$

Divide both sides by $\frac{-7}{5}$.

$$\frac{23 \cdot 5}{7} = 2^{3t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{23 \cdot 5}{7}\right) = \frac{3t}{4}$$

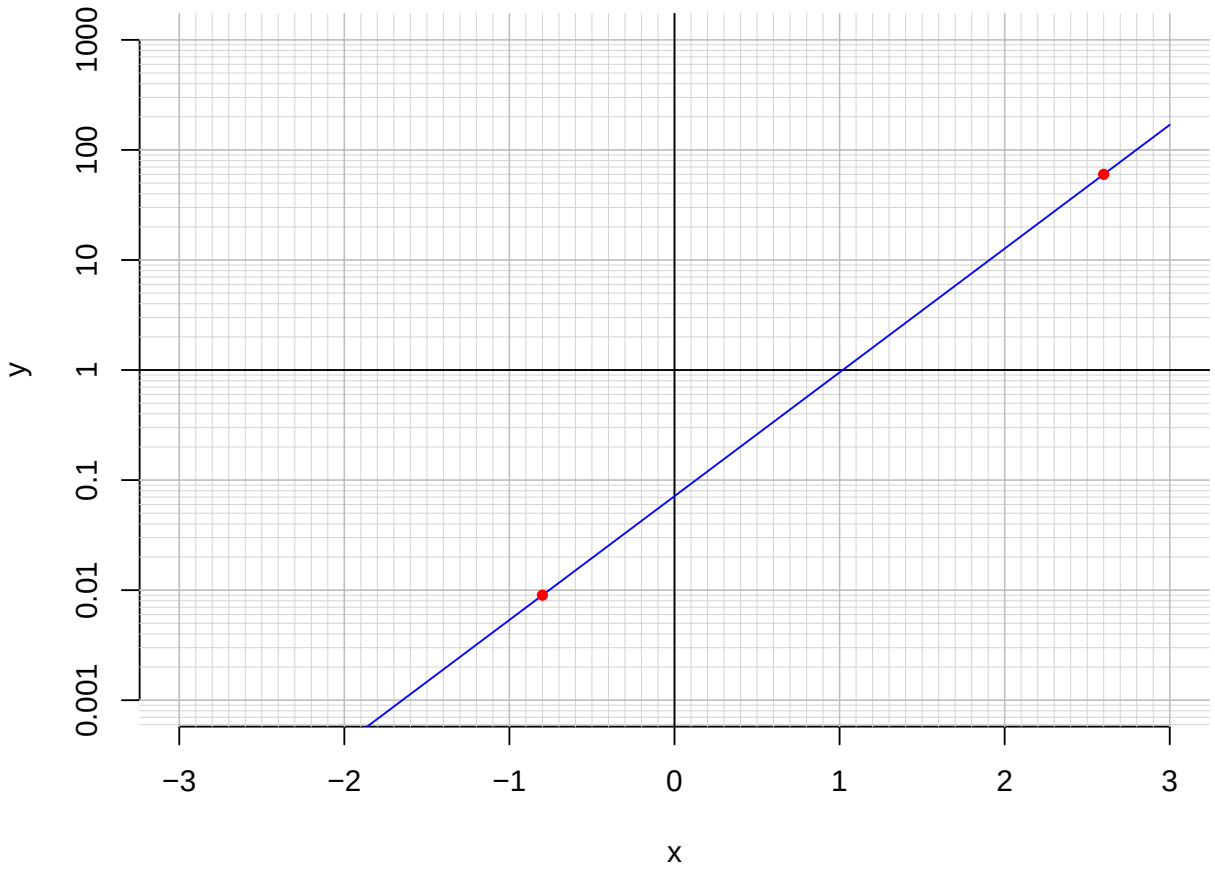
Divide both sides by $\frac{3}{4}$.

$$\frac{4}{3} \cdot \log_2\left(\frac{23 \cdot 5}{7}\right) = t$$

Switch sides.

$$t = \frac{4}{3} \cdot \log_2\left(\frac{23 \cdot 5}{7}\right)$$

3. An exponential function $f(x) = 0.0714 \cdot e^{2.59x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.6)$.

$$f(2.6) = 60$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.59} \cdot \ln\left(\frac{x}{0.0714}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.009)$.

$$f^{-1}(0.009) = -0.8$$